

REMARKS

Claims 1-12 have been amended.

Examination of the application is requested. No additional fees are seen to be required. If any additional fees are due, however, the Commissioner is authorized to charge Deposit Account No. 50-1482, in the name of Carlson, Gaskey & Olds, P.C., for any additional fees or credit the account for any overpayment.

Respectfully Submitted,

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CERTIFICATE OF MAIL

I hereby certify that the enclosed preliminary amendment is being deposited with the United States Postal Service as First Class Mail, postage prepaid, in an envelope addressed to Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on October 5, 2005.

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TRAY AND SUPPORT FOR TRANSPORTING WHEELS/OR RIMS A TRAY FOR
TRANSPORTING VEHICLE WHEELS AND/OR WHEEL RIMS AND A SUPPORT
FOR USE WITH THE TRAY

Reference to Related Applications

5 This application claims priority to PCT Application PCT/BR2003/000203 filed on December 23, 2002, which claims priority to Brazilian Application No. PI0205493-0 filed on February 5, 2002.

Background of the Invention

10 The present invention relates generally to a tray accommodating and transporting wheels and/or rims of various diameters and configurations, as well as to a support for use with this tray.

Description of the Prior Art

15 ~~Formerly~~ Previously, wheels of automotive vehicles were only a vital accessory and did not ~~have~~ provide the function of ~~composing~~ enhancing the appearance of the equipped vehicle; this. This role was ~~played~~ provided by wheel caps.

20 However, ~~with the passage of~~ over time and ~~in view~~ because of the high development of the automobile industry ~~these days~~, the automotive wheels are no longer a mere vital accessory and have now a fundamental importance as a stylistic element of the vehicle, irrespective of its market segment.

25 Independently of their construction/configuration, wheels ~~play~~ play an important role both in the appearance of the vehicle and in safety. So, ~~after~~ After the wheels have been manufactured, they ~~should~~ need to be transported very carefully, because a ~~wheel~~ ~~with scratches~~ scratched and/or a squashed wheel loses its market value. The transport of the wheels may be carried out by any means, ~~by such as~~ air, ~~by~~ or land, but generally, at least in Brazil, the wheels are transported by trucks on roadways, which, as is well known, are excessively uneven. So, the wheels may suffer damages during their transportation.

30 The known trays designed for transporting wheels provide a safe transport, but do not provide transport for wheels of different diameters together. Usually, trays only

accommodate wheels of the same diameter. So, if there is a need to transport wheels of different diameters, various trays have to be necessarily used.

Due to these drawbacks, various types of trays have been developed, which enable one to transport automotive wheels of different diameters at the same time.

5 Document W096/24530 describes a tray for accommodating wheels, ~~provided with including recesses defining that define~~ circumferences of varied diameters and ~~having that have~~ common stretches to accommodate wheels of different diameters, ~~which These trays~~. can carry wheels of the same diameter at the same time, as well as mixture of two or three configurations of wheels. The ~~great~~ drawback of this solution is the
10 ~~great large amount~~ of material demand required to make this tray, which raises its market value due to the thickness necessary to form the layers for fitting the wheels.

Document DE4339445 describes a tray provided with various configurations of guides for accommodating wheel rims of different diameters. ~~These~~The guides prevent the rims from moving to the sides, ~~besides fitting them and fit the rims~~ into the tray, ~~and~~,
15 The guides are configured so that they will permit little flexibility with regard to the diameters of the wheels to be transported.

Document JP8026283 describes a tray for accommodating and transporting automotive wheels which ~~has includes~~ grooves in its surface ~~corresponding that correspond~~ to the diameters of the wheels to be transported. ~~These~~The grooves are
20 configured so that the tray can receive and accommodate wheels of different diameters. The difficulty encountered in this solution is ~~the achievement of the grooves, which requires that it is expensive manufacturing steps to manufacture the grooves.~~

Document DE4229698 describes a tray for accommodating wheels of different diameters, ~~provided with including~~ transverse bars and frames composed of overlapped
25 annular segments forming steps ~~for accommodating that accommodate~~ wheels of different diameters. Each frame can accommodate at least two wheel configurations with different diameters, according to the need. The transverse bars and the frames are assembled by means of various pieces, ~~configuring that configure~~ a complex and difficult-to-assemble tray. In addition, these frames allow the wheels to detach easily, since they are not really
30 fitted, but merely accommodated, in the steps.

Document DE4310373 describes an apparatus for stacking and transporting wheel rims. ThisThe apparatus ~~comprises~~includes a tray that accommodates wheel rims of different diameters, which are fitted onto protuberances existing on the tray. TheseThe protuberances are provided ~~in such a way~~ that they will accommodate rims of automotive 5 wheels of different diameters and are configured so that only one rim size per use will be accepted, ~~that~~. That is to say, wheel rims of different sizes may not be accommodated on the tray at the same time. This document also relates to wheel rims and not to the assembled wheel.

The ~~earlier~~prior techniques have not yet provided a simple and practical tray for 10 accommodating wheels and/or wheel rims of different diameters simultaneously.

ObjectiveSummary of the Invention

An objective of theThe present invention is to provideprovides a tray for transporting and stacking wheels and wheel rims; which is easy to use, has a low 15 production cost and enables one to transport wheel rims and vehicle wheels of different diameters and/or configurations simultaneously. Another objective of theThe present invention is to providealso provides a support for use with athe tray as described above.

Brief Description of the Invention

The objectives of the present invention are achieved by means ofprovides a tray, 20 particularly for transporting wheels and/or rims of vehicle wheels, which ~~comprise~~includes at least one support having at least a first frame ~~comprising~~with at least one projection ~~and defining~~and that defines at least a first situation of interaction with a first wheel configuration, ~~the~~. The support ~~being~~is provided with at least one second frame, ~~the second frame cooperating~~that cooperates with the projection of the first frame, 25 ~~defining~~ and that defines at least a second situation of interaction with a second wheel configuration.

The objectives of the present invention are also achieved by means of a provides support, particularly for use with a tray for transporting wheels and/or rims of vehicle wheels, which ~~has~~includes at least a first frame ~~comprising~~having at least one projection and ~~defining~~that defines at least a first situation of interaction with a first wheel configuration ~~and having~~. The support ~~has~~ at least one second frame ~~cooperating~~that

cooperates with a projection of the first frame ~~defining~~ and ~~that defines~~ at least a second situation of interaction with a second wheel configuration.

The present invention has the following advantages, among others: ~~possibility of transporting. For one,~~ wheel rims and vehicles wheels of different diameters and/or configurations can be transported and easily manufactured simultaneously on a single tray; scale economy; easy manufacture; possibility of changing the. There is also an economies of scale. The wheel supports existing at the tray can be changed to bring about varied configurations for different types of wheels and/or rims; ~~and safe transport of.~~ Finally the wheels and/or rims, can be safely transported without the risk of damaging them.

Brief Description of the Drawings

The present invention will now be described in greater detail with reference to an embodiment represented in the drawings. The figures show:

- 15 —Figure 1 is a perspective view of ~~the~~a tray for transporting wheels and/or wheel rims of the present invention;
- Figure 2 is a perspective view in detail of a component of ~~the~~a tray support of the present invention; and
- Figure 3 is a top view of the tray for transporting wheels and/or wheel rims of the present invention.

Detailed Description of the Invention

As can be seen in ~~figure~~Figure 1, ~~the~~a tray 1 for fitting wheels and wheel rims of the present invention ~~comprises~~includes a rectangular base to which at least one first support 2a and at least one second support 2b ~~area~~are associated, ~~both~~. Both of ~~them~~ being~~the~~ the first support 2a and the second support 2b are preferably Y-shaped, ~~defining~~ and define three projections that are $\pm 20^\circ$ offset 120° relative to each other.

Each first support 2a enables ~~one to fit~~ wheels of a specific and single diameter to be fitted. Each projection of the Y-shaped first support 2a is provided with a first bottom step 5a, a second intermediate step 4a, a third top step 3a and a top surface, the steps configuring a stair. ~~These~~The steps 3a, 4a, and 5a define four first imaginary

circumferences around the first support 2a, having its center as a central point at its center.

The function of the steps 3a, 4a, and 5a is to enable one to fitenable the wheels and/or the wheel rims to be fit in such a way that they will not move while being transported and/or stacked. The flange of the wheel rim rests on the steps 5a; the steps 4a permit constriction of the rim, and the steps 3a permit constriction of the recess of the intermediate region of the rim, namely that of a smaller internal diameter. In the case of transporting When a wheel is transported, the disc faces upwards, that is, it does not touch the first support 2a. Further, the wheel may be fitted in such a way that the disc will face downwards. The mentioned constrictions are possible, because the three steps 3a and the three steps 4a define the already mentioned circumferences, the diameters of which cooperate with the respective points of the wheel rim.

However, one may design a first support 2a with which the wheel/rim interacts, or else it is fitted on other steps than those explained above, and even so it will be included in the protection scope of the present invention.

As already mentioned, the tray 1 comprisesincludes second supports 2b, which enables one to fit and transport at least one first and at least one second configurationdifferent configurations of wheels/rims of different diameters to be fitted and transported. Each second support 2b is provided withincludes a first Y-shaped frame 6 having three projections that are separated by 120° and two second frames 6' cooperatingthat cooperates with the first one,frame 6 and which are axially aligned and adjacent to two of the three projections of the first frame 6. Alternatively, one may foresee a second support 2b, on which the second frames 6' are positioned on the second support 2b in a different way, as long as they cooperate with the first frame 6 so as to enable one to transport wheels/rims of a first configuration and a second configuration, as will be explained later.

Thus, as in the case of the first support 2a, each of the thethe projections of the first frame 6 of each second support 2b is provided withincludes a firstbottom step 5b, a second intermediate step 4b, a third top step 3b, and a top surface, the steps 30 consecutively configuring a stair. TheseThe steps 3b, 4b, and 5b form four second

imaginary circumferences around the first frame 6, ~~having as and~~ a central point is at the center of the first frame 6. The first frame 6 may be identical to the first support 2a.

The two second frames 6', the positioning of which has already been ~~mentioned described~~, also ~~have include~~ three steps; a bottom step 5c, a second intermediate step 4c, a third top step 3c, and a top surface, the steps consecutively forming a stair. ~~These~~The steps are equivalent to the steps of the first frame 6, that ~~it to say is~~, they have the same height, positioning and geometric relations.

~~These~~The two second ~~frame~~frames 6' form four third imaginary circumferences together with the adjacent projection of the second support 2b, which has ~~not no~~ frame 6'.

10 ~~These~~The third circumferences have diameters that are larger than those of the second imaginary circumferences, which result from the displacement of their central point due to the positioning of the second frames 6'.

Thus, the second support 2b may fit wheels/rims of first and second configurations, ~~the~~. The fitting being is effected by ~~means of~~ the steps of both the frame 6a~~6~~ and the frame 6', which brings about a broader use of the tray 1 containing them, as will be better explained later.

The second support 2b has two possible situations of interaction for fitting the wheel; ~~a~~. A first situation 100 occurs with the interaction of the first wheel/rim configuration on the first frame 6, wherein the flange rests on the steps 5b of the three projections. The respective steps 4b permit constriction of the rim, and the steps 3b permit constriction of the intermediate region of the rim, that is ~~to say~~, the region of smaller internal diameter. Said ~~The~~ constrictions are possible because the three steps 3b and the three steps 4b define the already mentioned circumferences, the diameters of

20 which cooperate with the respective points of the wheel rim. ~~In the case of When~~ transporting a wheel, the disc faces upwards, that is, it does not touch the second support 2b, ~~or else the~~. The wheel may also be fitted in such a way that the disc will face downwards.

A second situation of interaction 200 occurs when the wheel/rim has a diameter that corresponds to the second configuration and ~~there is cooperation of~~ one of the 30 projections of the first frame 6 cooperates with the second frames 6'; where the flange of the wheel rim rests on the step 5b and on the steps 5c of the second frames 6'. The step 4b

cooperating with the steps 4c permits constriction of the rim, and the step 3b cooperating with the steps 3c permit constriction of the recess of the intermediate region of the rim, namely that of smaller internal diameter. The second frame 6' is detailed in figure Figure 2.

5 Evidently, the second configuration of a wheel/rim to be transported in the second situation of interaction 200 has a diameter larger than that of the first configuration of wheel/rim to be transported in the first situation of interaction 100.

The tray 1 may have varying area, shape and height, and a single tray 1 may ~~comprise~~include several supports for wheels/rims of at least one smaller diameter and 10 supports for wheels/rims of at least one larger diameter, ~~thus enabling one to transport~~ several wheels/rims of different diameters to be transported on a single tray, ~~which brings about~~. This provides an economies of scale-economy. Also, the number of supports 2a; and 2b on the tray 1 may vary according to its area; and according to the need of each company. Alternatively, it is possible to provide a tray 1 that will include only the second 15 supports 2b.

The second supports 2b are configured ~~so as to~~ preferably receive preferably first and second configurations of wheels/rims having diameters ~~varying~~that vary by three inches from each other, as for example 12"and 15", 13"and 16", 14"and 17", 15"and 18", 16"and 19", and 17"and 20", which are the most widely used diameters. However, 20 the combination of diameters that may be fitted onto the same support may vary according to the need of the company. The only configuration that is difficult to carry out is that of the support for fitting wheels of contiguous diameters, since ~~in this way~~ the two frames 6 and 6' are very close to each other, ~~which makes~~making it difficult to fit the wheel in the first situation of interaction 100.

25 The supports 2a; and 2b may be made from a material that is analogous to that of the tray 1, ~~as~~ for example, wood, and/or they may be made from a different material, being and fixed by any securing means. Alternatively, the supports 2a; and 2b and the tray 1 by be manufactured as a single piece.

30 The supports 2a; and 2b may have any other shape than that of a "Y" with the projections separated by 120°, such as a "T" shape or any other shape following the teachings of the present invention.

~~One may also provide removable~~ The supports 2a, ~~and~~ 2b, ~~and in this way it is possible to remove or replace them~~ can also be removed and replaced by another support of another configuration, thus making the tray 1 of the present invention very versatile, since it may have several supports for wheels of different sizes in a single configuration.

5 ~~And this~~This configuration may be modified, whenever necessary.

In the preferred embodiment, the tray 1 ~~comprises~~includes nine supports located on its top part, arranged in a three by three, a configuration. A first row ~~with~~has three supports 2b, a second row ~~with~~has three supports 2a and a third row ~~with~~has three supports 2b. Evidently, the number of supports 2a, ~~and~~ 2b may vary according to the area
10 of the tray 1.

The trays 1 are provided ~~in such a way~~ that they can be easily stacked, ~~and~~ their bottom part may have any configuration, so as to achieve the best interaction between the bottom tray and the top tray in a stack of trays, ~~be whether~~ they are accommodating wheels/rims or not.

15 A preferred embodiment having been described, one should understand that the scope of the present invention embraces other possible variations, being limited only by the contents of the accompanying claims, which include the possible equivalents.

The foregoing description is only exemplary of the principles of the invention. Many modifications and variations are possible in light of the above teachings. It is, 20 therefore, to be understood that within the scope of the appended claims, the invention may be practiced otherwise than using the example embodiments which have been specifically described. For that reason the following claims should be studied to determine the true scope and content of this invention.

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